

Amendments to the Claims

Claims Listing

1. (Cancelled)
2. (Currently Amended) ~~The method of claim 1,~~ A method for creating stacked layers of polysilicon, comprising:
providing a substrate, at least one patterned first layer of polysilicon having been created over said substrate;
depositing a second layer of polysilicon over said substrate, thereby including the at least one patterned first layer of polysilicon; and
etching said second layer of polysilicon, thereby removing remnants of the second layer of polysilicon from sidewalls of the at least one patterned first layer of polysilicon;
wherein said etching said second layer of polysilicon comprises a break-through etch (BT), a main etch (ME), an over etch (OE) and a flash etch comprising BT-ME-OE flash.
3. (Original) The method of claim 2, said BT comprising a pressure of between about 3 and 5 mTorr, source power between about 200 and 300 Watt, bias power between about 100 and 200 Watt, etchant gas Cl₂ supplied at between about 80 and 100 sccm, applied for a time of between about 8 and 12 seconds.
4. (Original) The method of claim 2, said ME comprising a pressure of between about 5 and 7 mTorr, source power between about 200 and 300 Watt, bias power between about 100 and 200 Watt, etchant gas Cl₂ supplied at between about 25 and 35 sccm with HBr supplied at between about 80 and 100 sccm with an OE of about 15%.

5. (Currently Amended) The method of claim 2, said OE comprising a pressure of between about 50 and 70 mTorr, source power between about 200 and 300 Watt, bias power between about 150 and 220 Watt, etchant gas HBr supplied at between about 150 and 250 sccm with He supplied at about 80 to 120 sccm, with He-O₂ supplied at ~~between~~ about 3.0 and 3.0 sccm.

6. (Original) The method of claim 2, said flash step comprising a pressure of between about 50 and 70 mTorr, source power between about 100 and 200 Watt, etchant gas SF₆ supplied at between about 40 and 60 sccm with He supplied at about 150 to 250 sccm, applied for between about 10 and 20 sec.

7. (Cancelled)

8. (Currently Amended) The method of claim 11 7, said first layer of gate material comprising polysilicon.

9. (Currently Amended) The method of claim 11 7, said second layer of gate material comprising polysilicon.

10. (Currently Amended) The method of claim 11 7, said inter-polysilicon dielectric material comprising oxide based material.

11. (Currently Amended) ~~The method of claim 7,~~ A method for creating stacked layers of gate material for mixed-mode semiconductor devices, comprising:

providing a substrate;

creating a layer of gate oxide over said substrate;

depositing a first layer of gate material over said layer of gate oxide;

patterning and first etching said layer of first gate material;

depositing a layer of inter-polysilicon dielectric material over said substrate, thereby including exposed surfaces of said first etched layer of first gate material;

depositing a second layer of gate material over said layer of inter-polysilicon dielectric material; and

patterning and second etching said second layer of gate material;

wherein said patterning and second etching said second layer of gate material comprising comprises the steps of a break-through etch (BT), a main etch (ME), an over etch (OE) and a flash etch ~~BT-ME-OE flash step~~.

12. (Original) The method of claim 11, said BT comprising a pressure of between about 3 and 5 mTorr, source power between about 200 and 300 Watt, bias power between about 100 and 200 Watt, etchant gas Cl_2 supplied at between about 80 and 100 sccm, applied for a time of between about 8 and 12 seconds.

13. (Original) The method of claim 11, said ME comprising a pressure of between about 5 and 7 mTorr, source power between about 200 and 300 Watt, bias power between about 100 and 200 Watt, etchant gas Cl_2 supplied at between about 25 and 35 sccm with HBr supplied at between about 80 and 100 sccm with an OE of about 15%.

14. (Currently Amended) The method of claim 11, said OE comprising a pressure of between about 50 and 70 mTorr, source power between about 200 and 300 Watt, bias power between about 150 and 220 Watt, etchant gas HBr supplied at between about 150 and 250 sccm with He supplied at about 80 to 120 sccm, with He-O_2 supplied at ~~between about 3.0 and 3.0~~ sccm.

15. (Currently Amended) The method of claim 11, said flash step comprising a pressure of between about 50 and 70 mTorr, source power between about 100 and 200 Watt, etchant gas SF₆ supplied at between about 40 and 60 sccm with He supplied at about 150 to 250 sccm, applied for between about 10 and 20 sec.

16. (Currently Amended) A method for creating ~~creation of~~ stacked layers of polysilicon, comprising:

providing a substrate, at least one patterned ~~pattered~~ first layer of polysilicon having been created over said substrate;

depositing a second layer of polysilicon over said substrate, thereby including the at least one patterned ~~pattered~~ first layer of polysilicon; and

etching said second layer of polysilicon, thereby removing remnants of the second layer of polysilicon from sidewalls of the at least one patterned ~~pattered~~ first layer of polysilicon, said etching said second layer of polysilicon comprising a break-through etch (BT), a main etch (ME), an over etch (OE) and a flash etch ~~BT-ME-OE flash~~.

17. (Original) The method of claim 16, said BT comprising a pressure of between about 3 and 5 mTorr, source power between about 200 and 300 Watt, bias power between about 100 and 200 Watt, etchant gas Cl₂ supplied at between about 80 and 100 sccm, applied for a time of between about 8 and 12 seconds.

18. (Original) The method of claim 16, said ME comprising a pressure of between about 5 and 7 mTorr, source power between about 200 and 300 Watt, bias power between about 100 and 200 Watt, etchant gas Cl₂ supplied at between about 25 and 35 sccm with HBr supplied at between about 80 and 100 sccm with an OE of about 15%.

19. (Currently Amended) The method of claim 16, said OE comprising a pressure of between about 50 and 70 mTorr, source power between about 200 and 300 Watt, bias power between about 150 and 220 Watt, etchant gas HBr supplied at between about 150 and 250 sccm with He supplied at about 80 to 120 sccm, with He-O₂ supplied at ~~between about 3.0 and 3.0~~ sccm.

20. (Original) Thee method of claim 16, said flash step comprising a pressure of between about 50 and 70 mTorr, source power between about 100 and 200 Watt, etchant gas SF₆ supplied at between about 40 and 60 sccm with He supplied at about 150 to 250 sccm, applied for between about 10 and 20 sec.

21. (Currently Amended) A method for creating ~~the~~ stacked layers of polysilicon for ~~creation of~~ mixed-mode semiconductor devices, comprising:

- providing a substrate;
- creating a layer of gate oxide over a ~~the~~ surface of said substrate;
- depositing a first layer of gate material over said layer of gate oxide;
- patterning and first etching said layer of first gate material;
- depositing a layer of inter-polysilicon dielectric material over the surface of said substrate, thereby including exposed surfaces of said first etched layer of first gate material;
- depositing a second layer of gate material over a ~~the~~ surface of said layer of inter-polysilicon dielectric material; and
- patterning and second etching said second layer of gate material, said patterning and second etching said second layer of gate material comprising a break-through etch (BT), a main etch (ME), an over etch (OE) and a flash etch ~~steps BT-ME-OE-flash~~ step.

22. (Original) The method of claim 21, said first layer of gate material comprising polysilicon.
23. (Original) The method of claim 21, said second layer of gate material comprising polysilicon.
24. (Original) The method of claim 21, said inter-polysilicon dielectric material comprising oxide based material.
25. (Original) The method of claim 21, said BT comprising a pressure of between about 3 and 5 mTorr, source power between about 200 and 300 Watt, bias power between about 100 and 200 Watt, etchant gas Cl_2 supplied at between about 80 and 100 sccm, applied for a time of between about 8 and 12 seconds.
26. (Original) The method of claim 21, said ME comprising a pressure of between about 5 and 7 mTorr, source power between about 200 and 300 Watt, bias power between about 100 and 200 Watt, etchant gas Cl_2 supplied at between about 25 and 35 sccm with HBr supplied at between about 80 and 100 sccm with an OE of about 15%.
27. (Currently Amended) The method of claim 21, said OE comprising a pressure of between about 50 and 70 mTorr, source power between about 200 and 300 Watt, bias power between about 150 and 220 Watt, etchant gas HBr supplied at between about 150 and 250 sccm with He supplied at about 80 to 120 sccm, with He- O_2 supplied at ~~between about 3.0 and 3.0~~ sccm.
28. (Currently Amended) The method of claim 21, said flash step comprising a pressure of between about 50 and 70 mTorr, source power between about 100 and 200 Watt, etchant gas SF_6

supplied at between about 40 and 60 sccm with He supplied at about 150 to 250 sccm, applied for between about 10 and 20 sec.

29 – 33 (Cancelled)